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ABSTRACT

This study examines the effects of the Promoting Alternative Thinking Strategies (PATHS) Curriculum, which provided children with instruction on a variety of issues involved with the expression, understanding, and control of emotions. Participants were 308 first and second graders. PATHS lessons were given about three days a week from October through April. Four main objectives of the curriculum were to: (1) teach children to "Stop and Calm Down"; (2) provide enriched linguistic experiences to help mediate children's understanding of self and others; (3) teach children to integrate emotional understanding with cognitive and linguistic skills in order to analyze and solve problems; and (4) encourage the development of self-esteem and effective peer relations. A slightly modified curriculum was also used in special education classrooms. PATHS lessons were sequenced according to increasing developmental difficulty and included dialogue, role-playing, modeling by teachers and peers, social and self-reinforcement, attribution training, and verbal mediation. Extensive generalization techniques helped teachers apply and transfer skills to other aspects of the school day. A critical focus of PATHS included facilitation of the dynamic relationship between cognitive-affective understanding and real-life situations. Findings regarding emotional understanding are reported and discussed. (RH)

Improving Children's Understanding of Emotions: The Effects of the PATHS Curriculum

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Recently there has been growing interest in the development of the understanding of emotions in middle childhood (Harris, 1989) as well as in the issue of emotional regulation and its development. Considerable work has been conducted which has mapped out developmental levels or stages in the understanding of cues for recognizing emotions, the understanding of the simultaneity of emotions, and how feelings are hidden and changed. Further, there has been considerable work on the early stages of the development of self-control and emotional control. At present, however, there has been little research on either individual differences in emotional understanding or how psycho-educational approaches might improve children's understanding of emotions and behavioral/emotional control. This study examines the effects of the PATHS (Promoting Alternative THinking Strategies) Curriculum which sought to provide children with instruction regarding a variety of issues involved in the expression, understanding, and control of emotions.

Method

The participants of the study included 308 first and second grade children (mean age = 8.1 years) Approximately 70% of the children were educated in regular classrooms and 30% were educated in special needs self-contained classes for children with learning and/or emotional and behavioral difficulties. There was considerable heterogeneity in regards to social class and ethnicity (with approximately 45% of the children being of one of a number of ethnic minorities). Classrooms (or schools) were randomly assigned to treatment or comparison

groups. Children were pre-tested in Spring of 1988 (at the end of either first or second grade) and post-tested a year later in the Spring of 1989. Table 1 present the number of children by age and sex who were in the intervention and comparison samples for both regular and special education groups.

The Intervention

The "experimental" teachers attended a 3-day training workshop and received weekly supervision and observation of the teaching of PATHS Lessons. The PATHS lessons were given approximately 3 days per week from October until April. The PATHS Curriculum is a daily classroom program for elementary age students designed to improve self-control, emotional understanding, and social problem-solving skills. There are 4 main objectives. First, we teach children to "Stop and Calm Down," a response that facilitates the control of emotional arousal and behavior through self-regulation. Second, we provide children with enriched linguistic experiences which helps mediate the understanding of self and others. This is accomplished through a series of lessons that discusses a variety of emotions and their relationship to behavior. Third, we teach the children to integrate emotional understanding with cognitive and linguistic skills to analyze and solve problems. The children are taught that feelings are signals that communicate useful information. Fourth, we encourage the development of positive self-esteem and effective peer relations. A slightly different version of the curriculum was used in the self-contained special education classrooms in which an additional introductory unit, called the Turtle Unit, was used to increase behavioral self-control.

PATHS lessons are sequenced according to increasing developmental difficulty and include dialoguing, role-playing, modeling by teachers and peers, social and self-reinforcement, attribution training, and verbal mediation. Extensive generalization techniques are included to assist teachers in applying and

transferring skills to other aspects of the school day. A critical focus of PATHS includes facilitating the dynamic relationship between cognitive-affective understanding and real-life situations.

For today's presentation, The Feelings Unit, which consists of teaching emotional and interpersonal understanding, is most germane. This section contained approximately 35 lessons. The lessons cover approximately 30-40 different affective states and are taught in a developmental hierarchy beginning with basic emotions (happy, sad, angry, etc.) and later introducing more complex emotional states (jealousy, guilt, pride). As the ability to label emotional states is a central focus of our model, major emphasis is placed on encouraging such labeling as a precursor for effective self-control and optimal problem resolution. Children are also taught cues for the self-recognition of their own feelings and the recognition of emotions in others, affective self-monitoring techniques, training in attributions that link causes and emotions, perspective-taking skills in how and why to consider another's point of view, empathic realization of how one's behavior can affect other people, and information regarding how the behavior of others can affect oneself. Lessons are also included on how feelings change and can be hidden. From a sociological standpoint, PATHS is a has an explicit model of emotion socialization. Further, when teaching emotions we distinguish among its components of expression, feeling, and situation

We have developed a unique generalization technique for the Feelings Unit. During the first Feeling lesson, the children make their own Feeling Boxes. After each emotion concept is introduced during subsequent lessons, the children are given their own personal Feeling Faces. As the lesson progresses, the children's boxes, which they keep in their desks, become full of different Feeling Faces. The Feeling Faces fit into an attached strip on the child's desk that reads "I feel....". Table 2 shows examples of both comfortable and uncomfortable Feeling Faces.

Teachers also have their own set of Feeling Faces which they use as models for their students. Thus, the children learn how to express their feelings throughout the day by looking in their boxes and choosing their present emotions to display in their Feeling Strips.

The technique is useful for a wide range of emotional difficulties. Impulsive and aggressive children, for instance, can begin to mediate their nonverbal anger with nonaggressive responses. A typical example is the child on the verge of tantruming or hitting another child, who instead stomps to his/her desk and jams his/her Angry Face into his/her Feeling Strip. In this way, the child is learning to substitute language (i.e., labeling) for acting-out behaviors. The use of the Feeling Faces allows for day-long generalization and pairing of labels with real-life emotional responses.

Today, I will focus on the findings of the primary outcome measure regarding emotional understanding which is the Kusche Affective Interview (KAI). This measure assess five domains: ability to discuss examples of 10 different emotions, cues for recognition of emotions in self and other, how and why emotions are hidden, issues regarding the simultaneity of emotions, and how emotions change. The interview requires 30-45 minutes. Coder reliability was above .80 for all aspects of the KAI.

Results

Using a repeated-measures MANOVA model of residualized change scores, we examined the main effects of Educational Placement and Intervention as well as the within subjects effect of time. We will discuss findings for this interview in the order in which it was given to the children.

Verbal access to feeling words. We first asked children to tell us "all the words you know for feelings." Although, as Harter has reported, the total number of negative and positive feeling words that kids can generate both to picture

stimuli and spontaneously is related to age and especially to verbal IQ, it also was significantly altered by the PATHS intervention (see Table 3). This was true for both positive and negative affects (although there is still an approximately 3:1 ratio of negative to positive words) and thus indicates that the extent to which the recognition of internal feeling states is a focus of intervention, will effect the child's willingness or ability to talk about different feelings.

Appropriate examples. We then asked children to provide us with appropriate examples of 10 different feelings by asking "Tell me about a time when you felt XXXXX?": appropriate responses were loosely defined as examples that we believed might realistically be felt in the situations that they discussed. Following the work of Harter and ideas generated from developmental models of emotion differentiation, these were divided into five basic feelings and five complex feelings. The basic five were Happy. Sad, Mad, Scared, and Love. Although at pretest appropriateness of examples was related to verbal IQ, and most children were able to provide correct examples for these words, there was a significant effect of PATHS such that children increased in the proportion of appropriate examples compared to the comparison children (see Table 4).

The more advanced set of feelings included proud, guilty, jealous, nervous, and lonely. In contrast to the more basic feelings, there was no significant effect for the second set of more advanced feelings as a result of PATHS. However, there was a significant Time effect, with both special ed and reg ed children improving during the year.

Definitions of feelings. For the 5 more advanced feelings we also asked for definitions prior to examples. "What does XXXXX mean?" The answers were scored on a 0 to 2 scale in a manner analogous to the scoring of definitions on the Vocabulary Subscale of the WISC-R. There was a significant Intervention by School Placement interaction showing that regular education students who

received PATHS were the only group to significantly increase in their ability to provide definitional statements across the one year period.

Understanding the simultaneity of feelings. We then asked the children a series of questions to probe their understanding of having more than one feeling at the very same time. We asked about three different pairs of feelings. Sad and Mad, Happy and Sad, and Love and Anger. We first asked "Can someone feel happy and sad at the very same time?" If the child answered yes, we then asked for an example of a time when they felt these at the very same time. If they had answered no, we asked why. The data was coded according to the system developed by Carroll and Steward. In terms of developmental level at pre-test, the children fell between stages 1 and 2; at Level 1, feelings are seen as singular and it is not deemed possible to experience them simultaneously; at Level 2, children state that feelings are felt simultaneously, but give examples that are clearly sequential. Similar to the results of Carroll and Steward, Harter, and Donald and Westerman, we found that children were more likely to say that one could feel sad and mad (same valence) than sad and happy (different valence). However, regular education children scored at the same developmental level at pretest for Love/Anger as for Sad/Mad, while special education children showed a significantly lower level of understanding of the difference valence feelings (Love/Anger). We found no effects of the intervention either on the belief that one can experience feelings simultaneously or on the developmental level of their understanding. Further, there were no developmental effects across the 1 year period (see Table 5).

Hiding feelings. We then asked the children questions about hiding feelings. The first questions were "Can you hide your feelings?" and "Do you think there are times when people should hide their feelings?" For both of these questions we found a significant effect of intervention with children who received PATHS saying

Yes more often to both questions (see Table 6A). If they said Yes, we then asked "How can you hide your feelings or What Happens?" and "When or why should people hide their feelings?". Both of these questions were scored according to Carroll and Steward's developmental stage level system. For these two questions, we found no effects of intervention, but there were significant effects for Time across the entire sample (see Table 6B).

Changing feelings. In this domain, we asked children two Yes/No questions "Can feelings change?" and "Suppose you were upset, could your feelings change?" At pretest, 90% of regular educations said yes to the first question and 95% said yes to the second question; thus, there was a ceiling effect with no possibility that intervention could have impact. However, within the special education group there was a significant effect for intervention with a 20% rise in the number of children who answered yes to these questions (see Table 7A).

We also asked the children to give us an example of how their feelings could change and scored these answers according to two systems: one developed by Carroll and Steward and a second system developed by Donald and Westerman. The great majority of children gave an external action (like playing or doing something) that would lead to change and very few children provided an internal method (think of something else). However, there was a significant effect of the PATHS intervention on the developmental level expressed, with higher levels shown at post-test in the intervention group and no change as a result of time in the comparison group (see Table 7B).

Are all feelings OK?. We then asked the children "Are all feelings OK to have?" There was no effect of intervention or of time. We then asked "Why? or How do you know that?" and scored these responses according to 3 developmental levels: Level 1 included statements such as "you just know it," Level 2 responses noted that feelings are categorical and part of a system, and

Level 3 responses included the idea that feelings exist in a system, are inevitable, or exist regardless of our judgements of their Okedness. Children who received PATHS showed a significant increase in their level of justification with regard to why all feelings are OK.

Other findings. We have time to briefly discuss two other questions. First, what relations are there between answers on this emotion interview and behavior? In brief, children who show high rates of behavior problems and children who report more depressive symptoms do more poorly at pre-test on questions involving accessing feelings, beliefs about control of feelings, as well as developmental levels of understanding. Tomorrow morning, Elizabeth Cook will present a poster on the data regarding emotional understanding in children with significant behavior problems.

The second question is what other findings are associated with PATHS? When examining change in behavioral adaptation, we have been most interested in the special education children who were showing maladaptation at pretest. On both criterion referenced and norm referenced measures, there is significant change indicating that special education children who received PATHS improved compared to control children on indices of teacher rated social competence (peer sociability, sharing, self-control, communication, etc.). Carol Kusche will present a poster on behavioral outcome data tomorrow afternoon.

Discussion

What do these findings mean? What do they say about the effects of educational environments on aspects of emotional competence? What do the findings say about the developmental processes involved in emotional understanding? First, it appears that a less-than-one school year intervention was effective in altering the children's verbal access to a range of affects, their beliefs that they can hide their feelings, and among special education children, their

beliefs that they can change their feelings. In addition, the intervention had a mildly significant effect on their developmental understanding of how feelings can change. However, there was no effect of PATHS on the understanding of how different feelings can be experienced at the same time or on the ability to provide examples of advanced affects. Thus, it appears that PATHS has mostly affected the children's fluency and comfort in discussing basic feelings as well as the children's "efficacy" beliefs about their ability to hide and change their feelings. The intervention had less effect on the cognitive developmentally based scoring of their understanding or meta-cognitions about feelings.

There are a number of possible explanations for why PATHS showed little effect on meta-cognitive understanding. First, it may be extremely difficult to developmental levels of understanding in such a short period of time and this issue of change may be similar to that of other Piagetian physicalistic concepts such as conservation. A second possible explanation is that our verbal interview was not sufficiently sensitive to assess such changes. A third possibility is that the intervention itself did not place sufficient emphasis on meta-cognitive rationales and explanations of emotional phenomena. At present the answer is not clear. As we continue to follow these children it may be possible to narrow the possibilities. This is because approximately 40% of the sample received an additional year of PATHS which tended to focus on more advanced, and thus more meta-cognitive aspects of emotions and problem-solving. These data are not yet analyzed.

How might emotional understanding effect behavioral adaptation? This is a broad and complex topic that we can only touch on given the time constraints. Obviously there is no one-to-one or even close correspondence between emotional understanding and behavioral regulation. However, we believe that there are at least two mechanisms are at work. First, as an intervention such as PATHS alters the child's beliefs about emotions and how they work, this alteration in the

ideology about emotion (in Silvan Tomkin's terminology) may lead a child to be less reflexive in their behavior. This may be especially true for children who are quite impulsive and have not had models to demonstrate how reflecting on emotions (by naming them and considering their features) can lead to new solutions for regulating behavior. Second, as Meerum Terwogt has written, more advanced cognitive developmental understanding may lead to more advanced strategies for regulation of emotions. This may be akin to the manner in which meta-cognitive understanding is believed to affect the process of reading and writing.

Issues in Intervention: Teacher factors. We believe that the ultimate effectiveness of the curriculum rests on the manner and attitude with which the teacher interacts with the children. If the lessons are taught in a didactic or formal manner with a lack of genuineness, or as "just more lessons," we would predict little student improvement. We noted significant variation among the 15 or so teachers involved in this project. Factors such as modeling, sharing of emotions with the children, and establishing an atmosphere of respect for the beliefs and feelings of others are crucial for successful implementation. Further, the recognition on a daily basis that all of us encounter both interpersonal problems and uncomfortable emotions is important in helping children to see that their own experiences are normal, not deviant. These "process" issues regarding teacher and support staff attitudes toward the curriculum, and more globally towards the goals of education and the role of the teacher in general are vital; they can be seen as analogous in importance to the influence of "non-specific factors" in psychotherapy outcome research. They are an area in need of greater assessment when examining the effects of intervention.

Individual and systems factors. Our work has focused on how the individual develops a healthy and adaptive personality through the gradual growth and

integration of affective, cognitive, and behavioral skills. As such, our model mainly concerns the development of the individual. Although we have emphasized that the quality of the child's interactions with the environment are crucial to the outcome, we have placed less emphasis here on both the conceptualization and measurement of environmental factors. In considering the individual in the larger living systems ecology, it is important to approach theories of development and change in an integrated fashion.

As one attempts interventions in a complex system such as a school, the considerations of ecological change become immediate. Borrowing from Silvan Tomkins' theory of affect (Tomkins, 1962, 1963), one might conceptualize the PATHS model as attempting to create an ideology in the schools that focuses on the shared values of communication and problem-solving. Further, we are attempting to promote a process of institutionalization of this ideology across persons, settings, and time (Elias, 1987, 1989). This ideology is broader than the curriculum itself and includes the following values: (1) the importance of engaging the child's affect with salient teaching, (2) that one must teach to the "whole person" and recognize that how both the teacher and child are feeling is critical to success, (3) that teaching thinking skills is a process that should occur in both interpersonal contexts and during traditional academic time, (4) that a critical part of schooling involves instilling healthy self-attributions that build confidence and direction in the child as a learner and as a person and (5) that it is necessary to model and teach strategies by which affect can be appropriately recognized, mediated, and modulated.

This ideology is critical to intervention success and its transmission is itself an emotional process. As developmentalists, it is important to recognize that such ideological processes are necessarily slow. Further, the child's acquisition and internalization of skills is also a gradual developmental process. Nevertheless, our

research has demonstrated that aspects of emotional understanding can successfully be taught in a school environment by classroom teachers of elementary school-aged children. To our knowledge, this is the first clear demonstration of this finding.

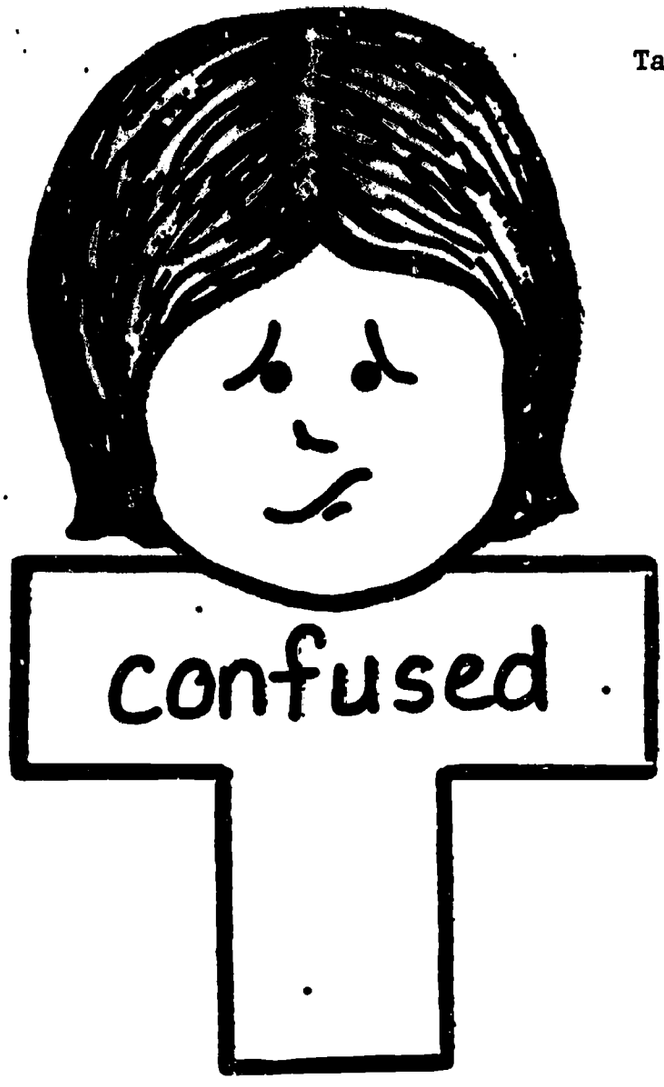
Table 1

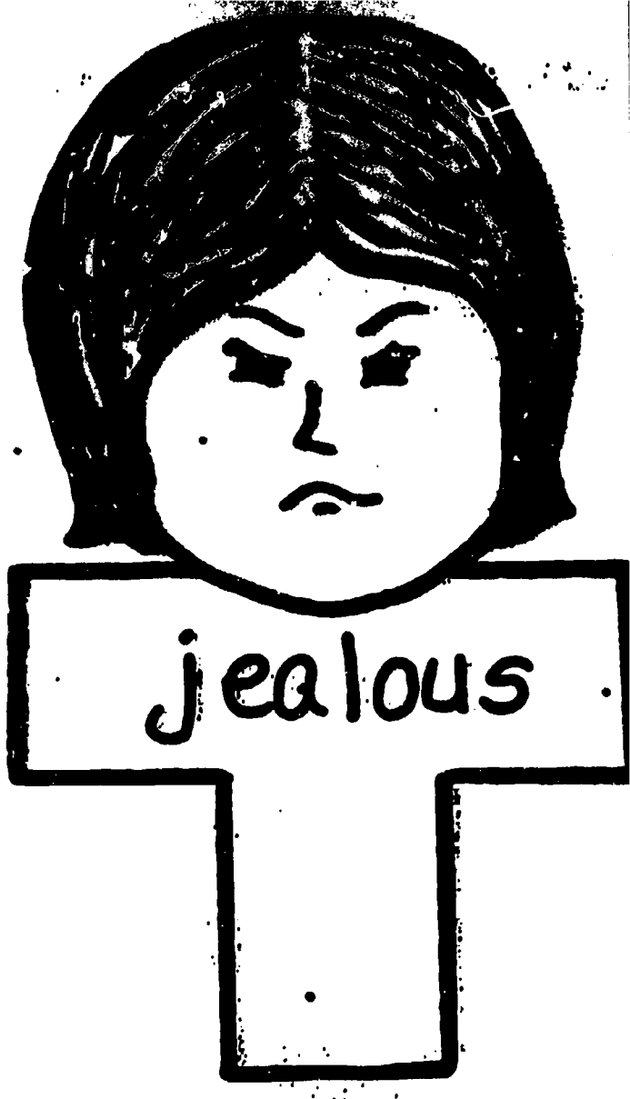
Demographic Characteristics of Participants

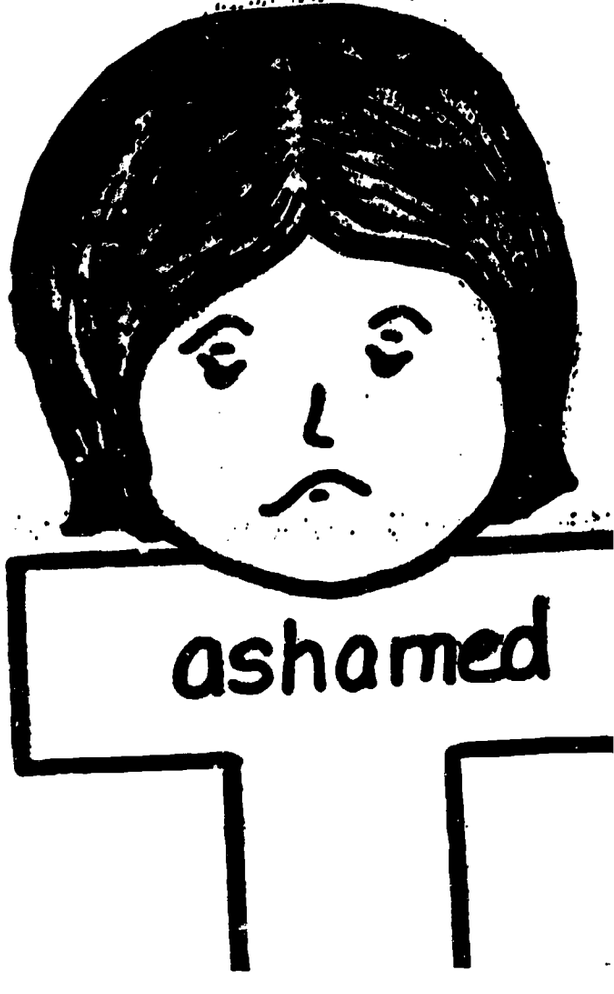
(Total Sample = 308)

	Regular Education		Special Education	
	Intervention	*Comparison*	*Intervention*	*Comparison*
Sample Size	87	113	49	59
Age (months)	92.9	98.0	95.7	97.2
Gender				
Male	57%	47%	71%	68%
Female	43%	53%	29%	32%

Table 2A







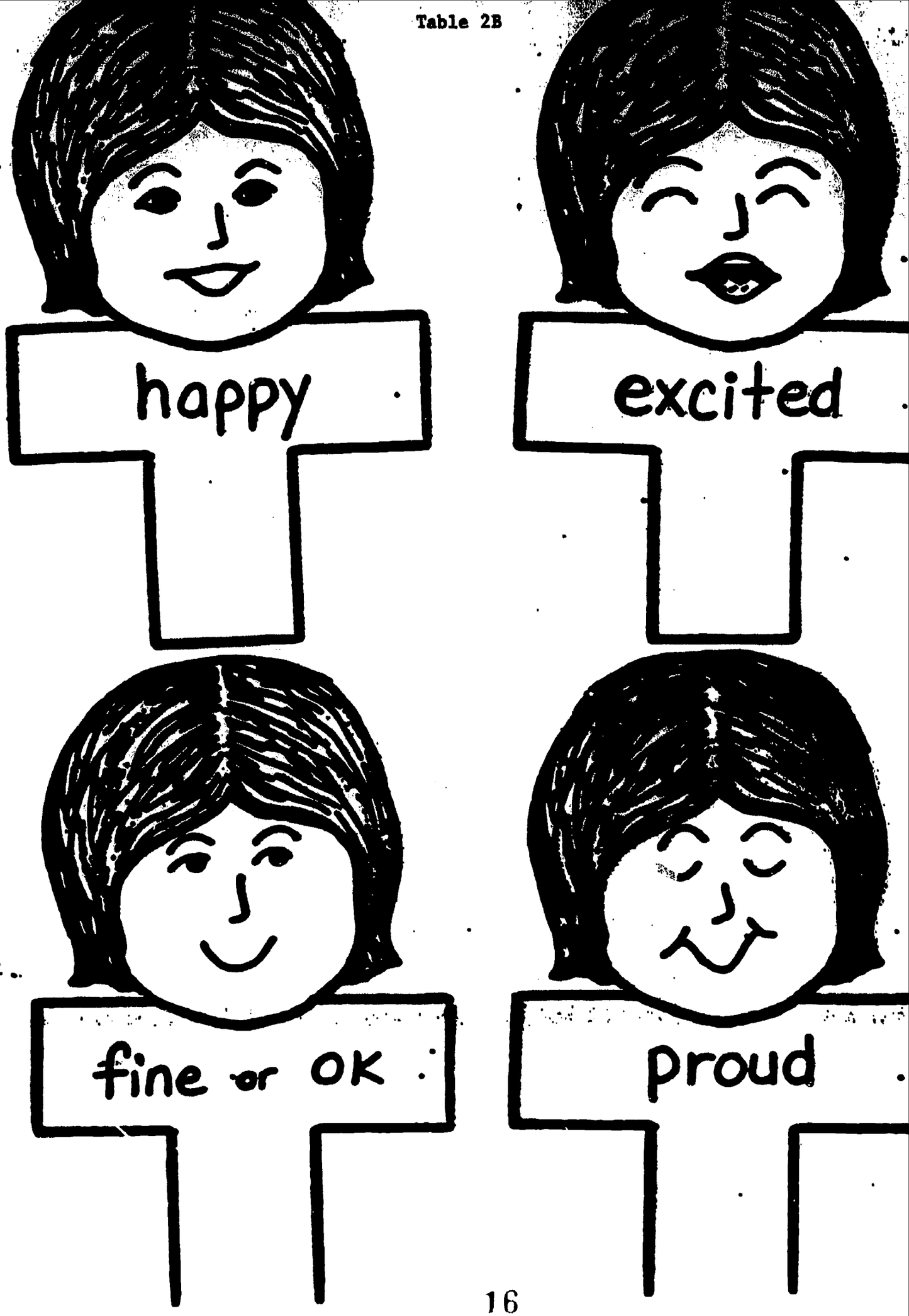

happy
excited
fine or OK
proud

Table 3

Verbal Access to Affect Vocabulary

"Tell me all the words you know for feelings"

Positive Affects

	Pre-Intervention	Post-Intervention
Intervention	2.6	4.0
Comparison	2.7	2.4

$F = 38.2, p < .0001$

Negative Affects

	Pre-Intervention	Post-Intervention
Intervention	7.3	11.5
Comparison	7.0	7.7

$F = 63.2, P < .0001$

Table 4

Appropriateness of Examples of Emotions

"Tell me about a time when you felt XXXXX"

(Proportion of Correct Responses)

Basic Affects (Happy, Sad, Mad, Scared, and Love)

	Pre-Intervention	Post-Intervention
Intervention	85%	91%
Comparison	87	86

F (1,308) = 8.2, P = .004

Advanced Affects (Proud, Guilty, Jealous, Nervous, Lonely)

	Pre-Intervention	Post-Intervention
Intervention	55%	64%
Comparison	55	64

Intervention Effect is Non-Significant

Time Effect F (1,308) = 29, P < .000

Table 5

Comprehension of the Simultaneity of Different Affects

"Can someone feel XXXX and XXXX at the very same time?"

Scored according to Developmental Level

(Carroll and Steward system)

Sad and Mad

Happy and Sad

Love and Angei

No effect for Intervention

No effect for Time

Table 6A

Hiding Feelings

"Can you hide your feelings?"

(Scored as the Proportion Responding "Yes")

	Pre-Intervention	Post-Intervention
Intervention	60%	91%
Comparison	65	65

F (1,306) = 18.3, P<.0001

Do you think there are times when people should hide their feelings?

(Scored as the Proportion Responding "Yes")

	Pre-Intervention	Post-Intervention
Intervention	62%	82%
Comparison	70	68

F(1,306) = 11.2, P<.0001

Table 6B

Hiding Feelings

"How can you hide your feelings?" or "What happens?"

Scored according to Developmental Level

(Carroll and Steward system)

	Pre-Intervention	Post-Intervention
Intervention	1.53	1.76
Comparison	1.47	1.70

No effect for Intervention

Time effect F(1,174) = 7.4, P<.001

"When or Why should other people hide their feelings"

Scored according to Developmental Level

(Carroll and Steward system)

	Pre-Intervention	Post-Intervention
Intervention	1.29	1.62
Comparison	1.20	1.61

No effect for Intervention

Time effect F(1,175) = 22.6, P<.0001

Table 7A

Changing Feelings

"Can feelings change?"

(Scored as the Proportion Responding "Yes")

(Special Education Only)

	Pre-Intervention	Post-Intervention
Intervention	65%	85%
Comparison	78	75

$F(1,306) = 7.0, P<.01$

"Suppose you were upset, could your feelings change?"

(Scored as the Proportion Responding "Yes")

(Special Education Only)

	Pre-Intervention	Post-Intervention
Intervention	68%	88%
Comparison	78	68

$F(1,306) = 8.9, P<.01$

Table 7B

Changing Feelings

"If you felt upset, could you do anything to make your feelings change?"

and

"If you felt upset, could anything happen to make your feelings change?"

Scored according to Developmental Level

(Carroll and Steward system)

	Pre-Intervention	Post-Intervention
Intervention	0.85	1.20
Comparison	1.05	1.01

F (1,259) 10.4, P< .001

Figure 1

4 Main Objectives of the PATHS Curriculum

1. *Control of Arousal and Behavior Through Self-regulation*

2. *Focus on Affective Vocabulary and Emotion Processing*

3. *Integrating Affective, Cognitive and Linguistic Skills For Effective Social Problem Solving*

4. *Promote Positive Self - Esteem and Effective Peer Relations*